

# CACTUS AND SUCCULENT JOURNAL

VOL. XXX

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No. 4



FIG. 49. *Epiphyllum oxypetalum* flowering in Australia  
(see Desert Flowers Under Glass, pg. 99)



## CACTUS AND SUCCULENT JOURNAL

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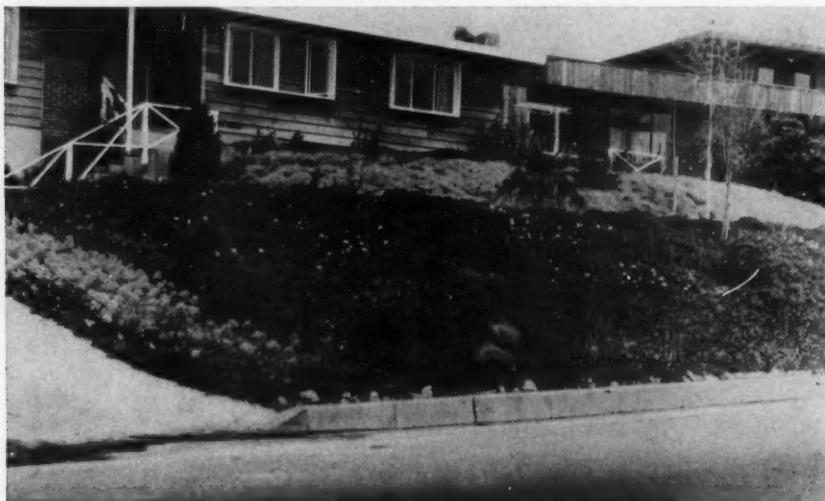


FIG. 50. The light colored ground cover is *Sedum palmerii* which grows to a foot high and when in flower is a solid mass of yellow.

## LOS ANGELES CACTUS AND SUCCULENT SOCIETY

The Los Angeles Cactus and Succulent Society will hold a meeting at the Agricultural Center, Fremont High School, 425 E. 79th Street, Los Angeles, at 2:00 P.M., Sunday, July 13th. Plant of the month is North American Plains Cactus. Refreshments will be served. A study hour precedes the meeting beginning at 12:30 to 1:00 P.M., conducted by Don Skinner. These meetings should all be attended by local members of the Cactus and Succulent Society of America.

## COLORADO CACTOPHILES

Officers for 1958:

Mrs. Julia Willis, President; Frank C. Stiles, Vice-President; Mrs. Barbara Bartling, Recording Secretary and Treasurer; Mrs. Elizabeth Eckstein, Corresponding

Secretary. Meetings are the fourth Sunday of each month in members' homes. Note-books are rotated, each one writing all he can find on the assigned subject of the book which he has that month. Field trips in the summer.

Evergreen, Colorado

## NEW SOCIETY IN FLORIDA

A club is being formed in the Tampa Bay area. All persons interested should contact Mrs. James J. Hearne Jr., 3006 Aquilla Street, Tampa, Florida. Phone 8-20242.

## EDITOR'S NOTE

If any of the regular columns are missing in this issue, it is because summer vacations made it necessary to get the July-August number out early.

## DESERT FLOWERS UNDER GLASS

*The story of my experiences and delight in growing and flowering Cacti and Succulents in a small glasshouse in Christchurch, New Zealand*

By MARJORIE E. SHIELDS

### CHAPTER 7

What a lovely night! The sky is studded with stars and the moon is full. Open the door softly, step inside quickly, and close the door again gently for we must not waken those already asleep, and the Spirit of the Night must not escape!

Our first flowers just inside the door are very wide awake. And *Nyctocereus serpentinus* like a serpent has climbed right up to the roof. Would you hold the torch and shine it on the flowers so we can see them? Aren't they lovely? The large cream blossoms flushed with pink, have light maroon back petals with tube to match. Look at it opening wider as we watch! It has many narrow petals and when fully open looks like a huge daisy. We shall leave it for the time being; it should be fully open as we pass by on our way out.

In the meantime go to the *Cereus* corner, where earlier there were several large buds ready to open. There is something so eerie and exciting about wandering around in here at night time; it makes me feel as though we should speak in whispers so as not to waken the sleeping blossoms. Oh, look! They are not sleeping, but are very wide awake. Aren't they glorious? And isn't the perfume wonderful! With such a scent it is no wonder they attract the night flying insects.

Shine the torch on *Harrisia bonplandii* first. This plant is about 2 ft., 6 in. high and has short, thick, blackish spines. The flower could be likened to a large lily, but is even more beautiful. The short, bronze scales at the base of the tube increase in length as they ascend, finally forming the back petals of the flower. As they become longer the bronze changes to lime green, remaining only to mark the mid rib. The first row of petals is also pale green, the centre ones pure white. A single row of cream stamens encircles the throat, while a thick bunch lies on the lower petals. The stigma lobes are palest green. Looking into the heart of the flower is like looking into a translucent green cavern.

The next one *Harrisia guelichii*, another beautiful lily with wide petals, has inner ones of pure white, and a faint flush of pink colours in the outer ones. The pale bronze back petals are very narrow with a faint green mid rib and the bronze green tube has scales to match. The stamens are white and the very long stigma lobes

look like a great cream velvety spider hanging in the pale green throat of the blossom.

Now shine the torch on *H. martinii*. This one with its prominent brown scales on a long slender green tube opens out into a funnel shaped cream flower, a little smaller than the others and with fewer petals. The biscuit coloured stamens and the pale greenish yellow stigma lobes on the end of the long style fall from a narrow throat. If we had not seen the other two first, we would have thought this very lovely, but the others do overshadow it don't they? *H. tortuosa* is another large one, with a little more colour than the other three, as the red scales on the flower tube add considerably to its beauty. The outer petals are brownish green, otherwise it is very similar. Isn't it a pity their life is so short? These will all be finished by morning. They really are Queens for one night only, each in her own right, for each is so beautiful. But even though they reign so briefly, there are more buds and more nights! In the autumn these blossoms will be replaced with brightly coloured fruits. *H. tortuosa*'s will be red, as also will be *H. martinii*'s, while *H. guelichii*'s will be bright scarlet. When these gay apples are ripe they split and the white frothy inside pours out, looking just like Candy Floss, passion fruit flavoured.

The two *Trichocereus* may still be out in the morning, especially if the weather is dull. *T. bridgesii*, collected in Bolivia, is a grand plant. With its thick columnar stem and low ribs, it is quite outstanding apart from its flower. The buds looked like small brown woolly bears sitting on top of the plant. Now the flowers have opened we can see the short tube thickly covered with fine brown wool. The light green back petals have bronze and darker green markings; the inner ones white, broad and ruffled. The whole centre is filled with quite short, deep cream stamens, but the style is long, longer even than the petals, and the stigma lobes like a lovely cream daisy. This is a very beautiful flower.

*T. spachianus* has dark brown wool and thick green scales on the tube and as the latter ascend the tube they lengthen into green petals with pink mid ribs. The outer petals are flushed with pink, the white inner ones are wide, with slightly frilled edges. Very large anthers balance on the tips of the cream filaments, and the lime green style and stigma lobes match the throat;

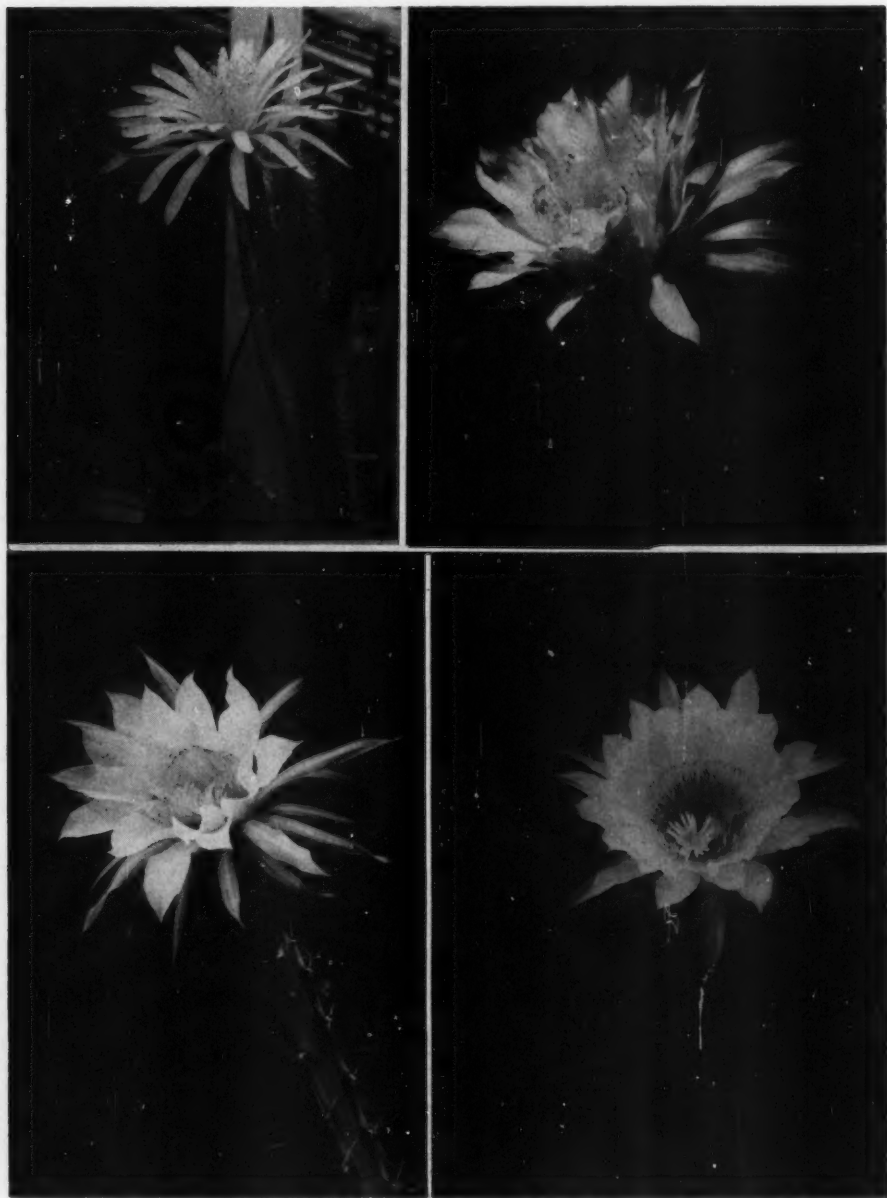


FIG. 51. Upper left: *Nyctocereus serpentinus*. Upper right: *Harrisia bonplandii* var. *brevispina*.  
Lower left: *H. guelichii*. Lower right: *Trichocereus bridgesii*.

another very beautiful lily-shaped flower. All these night bloomers seem to be large, the reason I suppose being so they can be seen at a distance by insects.

The next two which are rather different, are *Monvilleas*. I noticed the bud on *M. spegazzinii* breaking when I came into the glasshouse earlier this evening, and now here it is in all its glory, fully open. Shine the torch on it so we can see its frail beauty. What a long, slender tube it has. The back or ray petals have a wide, deep pink almost maroon mid rib, leaving only an edging of the pale pink. The next row has a brightish pink mid rib, and the inner ones are pure white and feathered along the edges. These fall gracefully between the thin pinkish maroon ray petals, so that the deep pink ones stand up between the curved central white ones. It resembles a dainty, fragile iris. The white stamens are almost as long as the petals; the style is deep pink to match the mid ribs, and the long cream stigma lobes are pink at the base. The flower is about the size of a smallish bearded iris. The plant itself is interesting too. The thin stem is four angled, dark green, marbled with light green to white, flushed at the top with maroon where the sun has caught it. I do hope it remains open until the morning so it can be photographed, as there are no more buds. (No photograph, the flower was beyond recall by morning.)

*M. cavendishii* suffers a little by comparison. The cream flower with narrow petals has a tube only half the length of the other, green in colour tinted with maroon, as are the back petals. The short filaments are also cream with anthers in a slightly deeper tone. The long cream style and stigma lobes extend well beyond the short stamens. The flower is smaller too, being about 3 inches across, the beautifully curved petals opening out fairly flat. Had we not seen the other we would have thought this very lovely, but *M. spegazzinii* overshadows it. The plant itself is not as interesting either, being just a long thin, many ribbed stem with short spines, minus the lovely colourings and markings of its sister. All the same it does look queenly—like a fine petaled waterlily as it is held aloft so proudly on the top of its long thin stem.

Along to the trellis now to see what the *Selenicereus* have to show us. Shine the torch up into the roof. An awe inspiring picture isn't it? This is the glory of *S. boeckmannii*, whose blossoms are hanging like stars. But what stars! 8 inches across! These blooms have long sharply pointed petals and unlike most cactus flowers, they haven't an open throat, but one completely filled with cream stamens of uneven lengths, with the small stigma lobes standing well clear

of them. The tube has a few stiff white hairs and tiny red scales widely spaced. These increase in size as they reach the flower intermingling with the bronze ray petals. The perfume is delicate and elusive. Both sides of the trellis as well as the roof are adorned with these lovely blossoms and there are many buds still to open.

Further along the trellis there were two enormous buds this afternoon. Keep the torch shining high. How lovely! They are both out! The largest flowers I have ever seen; simply enormous, 13½ inches across! Focus the torch on the back of the flower. Why it is almost as beautiful as the front. Look at the length of the tube! The lime green back petals, very long and narrow, flute out like rays of the sun around the white petaled flower. Mingling with the lime green ones are smaller red petals—the elongated scales I expect. The cream stamens are shortish, only about half as long as the 5-inch style, which has so many stigma lobes it looks like a flower itself. Its name? Let me see; follow the stem down with the torch—these stems are well tangled aren't they? There, that is the one, in the second tub, (see plan, Fig. 10, Jour. Vol. 29, No. 1), *Selenicereus grandiflorus*, the name describes it perfectly, "a large flower", and *Selenicereus* means "moon cereus"; it couldn't be better!

Just one more to show you, an *Epiphyllum* this time. Here it is *E. oxypetalum*, with a glorious and fragrant bloom. As this is a true species, the flower is white. It has a very long tube hooked at the stem end like a calabash pipe. See how the pink scales deepen in colour as they increase in length until they turn into petals intermingling with the real ray petals which are narrow and white. The wide, white inner petals are incurved making the flower cup-shaped. How wonderfully the stamens are arranged! Its beauty holds one spellbound, and is very hard to describe. As in many cactus flowers a single row of stamens is attached to the petals where they join the tube. These appear to be parted in the centre falling to each side in a sweeping curve and looking like a beautiful curled ostrich plume lying in the flower with its stalk in the throat and the feathers curled towards the centre; then there is another group, graduating in length right from the throat up the centre, as though to hide the rib of the feather, meeting the first group in a froth at the top. The style is quite hidden by this group of stamens but breaks free at the top and branches into many stigma lobes. Everything about the flower is cream with the exception of the pale yellow anthers and the elongated pinkish red scales which frame the blossom. A truly beautiful flower.

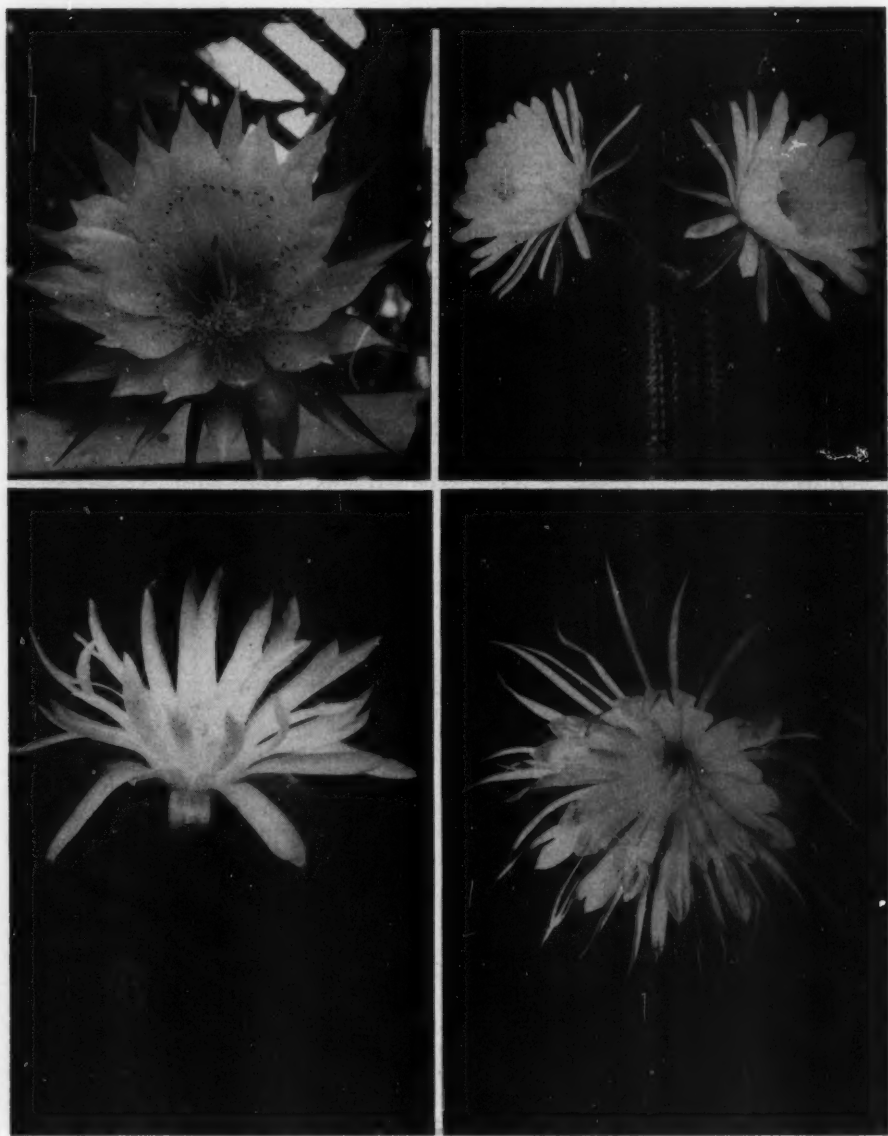


FIG. 52. Upper left: *Selenicereus boeckmannii*. Upper right: *Trichocereus spachianus*.  
Lower left: *Monvillea cavendishii*. Lower right: *Selenicereus grandiflorus*.

I think we have seen enough beauty for one night don't you? But as we leave we will see again the *Nyctocereus* at the doorway. Look! It has opened out flat, and the stamens standing up so straight in the centre look most wonderfully alive as they quiver in the moonlight. This is the only time to see this flower in all its beauty, it may still be open in the morning but

it will not look like this, but more trumpet shaped, and not nearly so alive as it does now, and it will have lost its almost intoxicating scent.

We will leave you now, Queens of the Night. Your life is so short but your blossoming has brought us so much wonder and delight.

*To be continued*

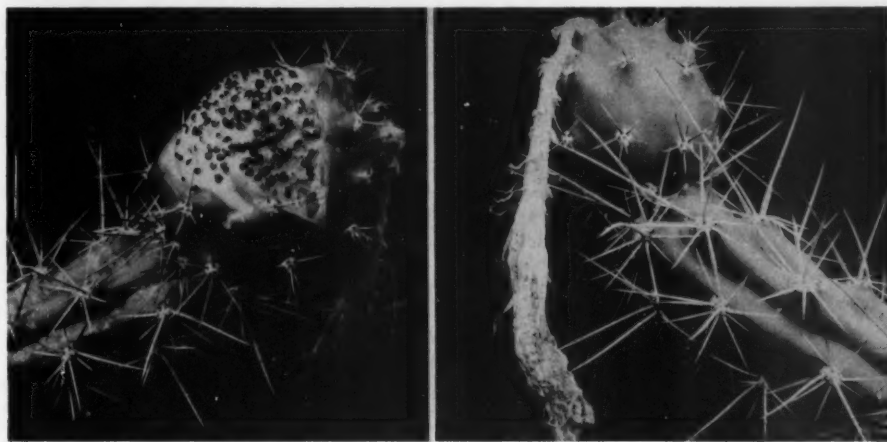


FIG. 53. Left: Fruit of *Harrisia tortuosa*. Right: Fruit before splitting is a beautiful red.

#### THE NEW YORK CACTUS AND SUCCULENT SOCIETY

The May meeting of the New York Society was in many ways our most satisfactory one. Attendance at meetings has been growing steadily with this meeting showing a registration of 47 adults. After dispensing with the business side of the meeting we entered into our program which began with an illustrated talk, "The Structure of the Flower". Since this is the heart of the spring flowering season it was felt that many of our members could use a refresher course—an elementary one—on that topic.

Next came our plant identification session to which members bring their plants for naming. This has proven to be a very popular portion of our programs and we get dozens of plants at each meeting for naming. We get a few that "stump the experts," but we manage to get most of them named. Following this came our monthly show and contest which was divided into two parts—any plant in bloom and any plant not in flower. So as to eliminate any one sided aspect to these shows we set up a class for window shelf growers and another for greenhouse growers. In the flowering group the winner was an *Echinopsis* hybrid "Pink" entered by Arthur Garrabrant in the greenhouse section. In

the same section for plants not in flower the winners were a *Mammillaria camptotricha* which won first prize for Arthur Garrabrant, and a *Euphorbia horrida* which won second prize for David Sprechman. In the window shelf section first prize was taken by a *Notocactus submammulosus* entered by Evelyn Camelbeek while second prize went to Helen Arp for her *Mammillaria nivosa*. Incidentally, Mrs. Camelbeek should be awarded a special prize for coming the furthest distance making a round trip over 200 miles to get to our meetings which she rarely misses—it takes more than a blizzard to keep her at home!

At each of our last few meetings we have managed to hold a plant sale and that seems to be the most eagerly awaited feature of the day since there are so few local sources for cacti and thus far we have had 100% sales each time, with our treasury profiting therefrom. The meeting ended with refreshments. Our June meeting will be the last one until October, but we have two picnics scheduled for the summer months—in July at Dr. Jerry Barad's where members can see his extensive collection housed in the greenhouse which was a "do-it-yourself" project. In

August the picnic will be held at Walter Mansel's—old members will remember the fun we had there two years ago.

Joseph Emma, Sec'y  
274 First Ave.  
New York 9, N. Y.

#### BOOK ON AGAVES NEEDED

In answer to my enquiry about a new book on Agaves and Yuccas, the Arnold Arboretum of Harvard College answered as follows:

"Mrs. McKelvey is not working on the Agaves nor planning a revision of her book. This rumor is just one of those things which crop up with no foundation at all."

More than ever I am of the opinion that there is a crying need for an up-to-date, fully illustrated book on Agaves, written in the English language. Agaves are perhaps some of the most fascinating Succulents. Among them are majestic plants, but also tiny dwarf plants that even the Windowledge Collector could treasure. Though they do not flower (that is, until they are ready to die) their variety of sizes and bold shapes, of strong color and texture, more than compensates for this lack and makes them the accent plant par excellence for any Cactus garden, be it in the large estate or the small backyard. Haven't you ever noticed how nearly every photograph published to advertise travels to San Diego, Los Angeles, Mexico, etc. never fail to show an Agave in the foreground? Agaves are so much of the American Southwest landscape. And they ARE Mexico! Economically as

well as aesthetically—and despite all this, Agaves are very poorly known. Not only are there really very few collectors of Agaves, but even among these few, there is too often a regrettable confusion of names. I have seen one of our Societies displaying at its show an *A. buachucensis* labelled *potatorum*!! I have seen *A. ferox* named *atrovirens*, and *A. atrovirens* named *cocblearis*. I have seen a number of plants labelled *shawii*, which in fact were anything but that. And time after time I have seen plants in collections without any label and been told casually that it was "just an Agave".

Perhaps I am biased but I think very strongly that Agaves should be better known, that they should occupy a more important rank in all Succulent collections, large or small. I feel that when people know them better, know them by their right names, realize the diversity that can be found in them, their interest in them will grow considerably. That is why an authoritative, up-to-date new book is so badly needed. Such a book would bring to an end the unfortunate confusion now so widely prevailing. It could also create a new interest in these plants which so rightly deserve much more attention from the Collector.

What about getting some one working on such a project? Perhaps some young scholar aiming at his Ph.D. could find this the proper subject for his thesis?

E. R. LE ROY  
544 Market St.  
San Francisco, Cal.



FIG. 54. Dr. Otto Laporte sent this colored postcard from Germany. The painting is by Carl Spitzweg in 1850 and shows strikingly the popularity of cacti and succulents in those days.  
Note the ever present Agave on the right.

## THE CACTUS BUG NEVER DIES

Back in 1928, we put up a small greenhouse which was a great deal of hobby with a small percentage of selling to pay for the overhead. Over a period of 10 years, the greenhouse was a great delight to me; containing over 2,000 cacti and succulents of all kinds. At the end of that time it was necessary to close the greenhouse and dispose of the plants. I felt at that time, that keeping any of them to be raised in our home, was a waste of time. Woe is me that I didn't keep some. I swore I would not go back to cactus in the future.

Growing in one of the benches at that time was a sprawling bunch of *Opuntia*. The greenhouse was left unused, and I never bothered with the *Opuntia*, which somehow had managed unwatered and with no heat to survive and throw out new pads each year. Last summer, seeing that one of the two large *Opuntias* was a nice shape, decided to pot it up in a 10-inch pot; also taking off enough to fill several 6-inch pots. That was my undoing. Does one ever, if you are a cactus "fiend," do away with the urge to collect cactus?

The *Opuntias* were brought in, and put on my glassed-in porch; which has south, west and east exposure. I started in collecting again! My husband started bringing home 3 to 6 cacti every week. I procured some from Johnson's and Gates' Nurseries. In April Mr. Quinn of Eastland, Texas, collected some large southwestern specimens for me; and this time last year I rejoined your Society.

The last of May, we moved the collection out to the greenhouse which is very much in need of caulking and

repairs. They have done fine. We are intending to bring them in on the porch before cold weather; having to put up more shelves.

Incidentally, I agree with Mr. Larry Gallant who wrote in one of the *Robins* about the beauty of the flowers of *Homalocephala texensis*. My 10-inch in diameter specimen had 12 lovely flowers on it which smelled perfectly scrumptious on the porch before it was put outside. My *Thelocactus uncinatus* and *Echinocactus* were full of flowers, and made quite a lot of seed. I now have seedlings two weeks old from my seed. The large specimen of *Hamatocactus hamatocanthus* is now starting to throw up three buds. On August 1st, the final flowers on the following cacti stopped, after having bloomed continuously from the time Mr. Quinn sent me the plants back in April: *Coryphantha neomexicana*, *C. vivipara*, *C. sulcata*, *Echinocereus reichenbachii*, *C. macromeris*. I have a collection of Mimicry or Stone seedlings from Johnson's seed which were sown in February, and now have popped out of their first forms into their true forms, and are about the size of large peas. In all the time in the past when I grew cacti in the greenhouse, I never grew them from seed; so therefore I now feel quite elated to see such a healthy bunch of seedlings coming along. Someday, I hope we can make use of the greenhouse in the winter again.

Mrs. J. H. Ryan,  
601 W. Graisbury Ave.,  
Audubon 6, New Jersey

## FURTHER NOTES ON ECHEVERIA

By ERIC WALTHER

Research Associate, Department of Botany, California Academy of Sciences

## PART III

*Echeveria affinis* sp. nov.

*Pertinens* Ser. *Amoenis*\*; *E. craigiana* affinis; caulibus brevissimis; foliis numerosis, rosulatis, oblanceolatis, acuminatis, ad 5 cm. longis, 2 cm. latis, brunneis; pedunculis ad 15 cm. altis; ramis 3-5, cymosis, nec paniculatis; pedicellis ad 8 mm. longis; sepalis adpressis; corollis 10 mm. longis, rubris.

*Type*: CAS: 403156. Mexico, without definite locality, collected by Mr. R. Flores (UC: 54/1241).

*Occurrence*: Mexico.

*Description*: (from living plant grown in the Strybing Arboretum, Golden Gate Park, S. F., in

1956). Stem very short, mostly simple; rosettes dense; leaves numerous, oblanceolate, shortly acuminate, to 5 cm. long and 2 cm. broad, strongly convex beneath, almost flat above, somewhat upcurved above middle; inflorescences 2 to 3, to 15 cm. tall; peduncle erect, its bracts few, oblong, acute, to 2 cm. long, ascending-spreading; inflorescence a flat-topped cyme with 3 to 5 spreading branches and no elongated central axis, each branch with 5 to 7 flowers; pedicels 8 mm. long; sepals appressed, subequal, ovate-deltoid to oblong-lanceolate, turgid, acute, tips somewhat incurved; corolla urceolate-campanulate, bluntly pentagonal, 10 mm. long, to 8 mm. in diameter at the spreading petal-tips; petals with small, but definite basal hollow within and apiculate tips; stamens 8-9 mm. long; carpels 8 mm. long, with slender styles; nectaries 1 mm. wide, narrowly lunate-reniform. Flowers in August.

*Color*: Leaves brownish-olive, at base cosse-green; peduncle olive-buff to corinthian-red above; bracts lettuce-green, to oil-green at tips;

\*Series AMOENAE: (Series *Paniculatae* Berger, pro parte) plantae perglabres; foliis crassis, clavatis, obtusis vel acutis; inflorescentiis cymosis usque ad paniculatis; bracteis numerosis, saepe caducis; pedicellis tenuibus; sepalis adpressis, brevibus vel elongatis; corollis cylindraceis vel campanulatis; petalis tenuibus, vix excavatis; nectariis minoribus, tenuibus. Typus: *E. amoena* L. de Smet.

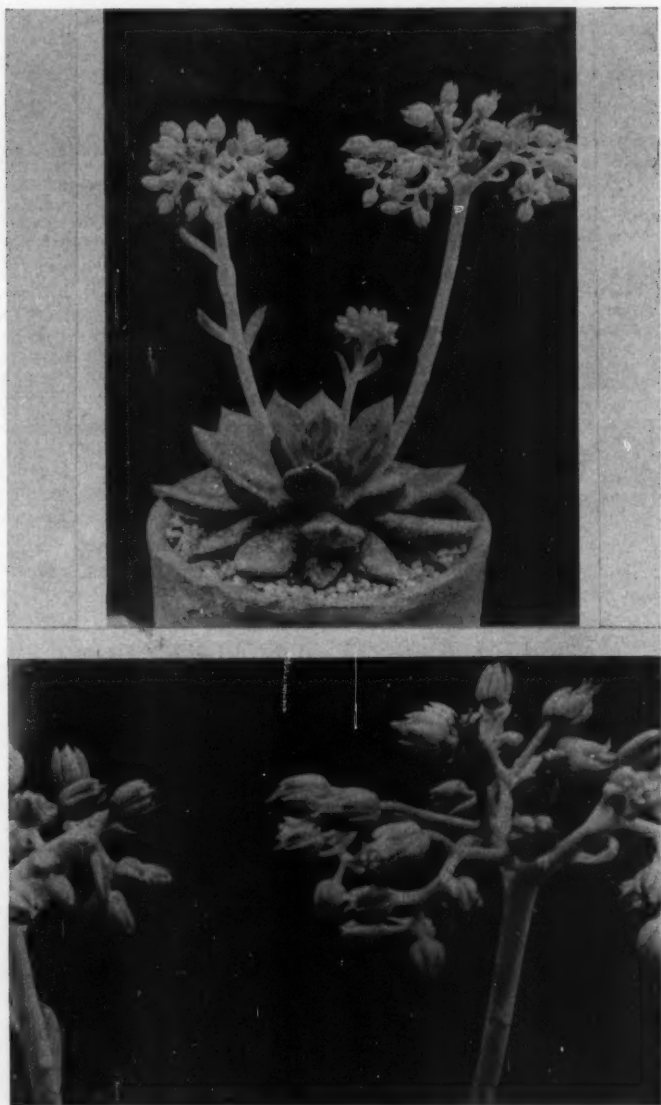


FIG. 54

*Echeveria affinis*. (top) flowering plant. (bottom) inflorescence.

sepals scееle's-green, to light-jasper-red at anthesis; corolla scarlet-red; petals inside eugenia-red; carpels whitish; styles straw-yellow; nectaries straw-yellow.

**Remarks:** Thanks are due Mr. Paul Hutchison of the University of California Botanic Garden at Berkeley for providing us with living material. The novel species is undoubtedly related to *E. craigiana*, but differs clearly in its flat, thinner, shorter leaves, its lower inflorescence, distinctly cymose rather than paniculate, etc. The closest similarity is to be found in color of leaves and corolla, in which respects *E. affinis*, as well as *E. craigiana*, bear a remarkable resemblance to the Bolivian *E. chilonense*. The last-mentioned two species come from almost opposite ends of the range of the genus *Ecbeveria*, a distance of well over 4,000 miles. However, *E. chilonense* is amply distinct in having an evident stem, a strongly angular corolla, sepals more spreading above, a weakly spreading peduncle and more elongated pedicels.

In cultivation the stem of this new species may become fasciated, leading to formation of a crest with smaller, crowded leaves.



FIG. 55

*Ecbeveria affinis*

- a. side-view of corolla x 2
- b. basal view of calyx x 2
- c. inside of petal x 2
- d. apex of petal x 8
- e. carpels x 2
- f. nectary, front-view x 16
- g. nectary, side-view x 16
- h. leaf x 0.4
- hh. leaf, cross-section x 0.4
- hhh. leaf, side-view x 0.4
- i. bract x 2

## ECHEVERIA SEMIVESTITA R. Moran

**Description:** (As emended by E. Walther) Plants puberulent or glabrous; stem evident but short, usually simple; leaves rosulate, narrow, oblanceolate, acute, 10 to 14 cm. long, 15 to 30 mm. broad, concave above, faintly keeled beneath, narrowed to subterete base, dark green, usually edged red or purplish, puberulous or glabrous; inflorescence paniculate, with 3 to 9 secund-racemose branches, to 55 cm. tall; peduncle puberulous below, above papillose or

quite glabrous; lower bracts 30 to 55 mm. long, puberulous or glabrous, obovate-oblong, straight or recurved; branches with 6 to 9 flowers each; pedicels 1 to 7 mm. long; sepals glabrous, unequal, longest 11 to 15 mm. long, green to purplish or bluish-glaucous; corolla glabrous, 13 mm. long, coral-pink to jasper-red, inside yellowish or light-coral-red; styles green or jasper-red; nectaries 1 to 2 mm. wide, white or yellowish.

## Key to the varieties:

- A. Stem, leaves, lower part of peduncle and bracts puberulent with simple hairs that are 0.25 to 0.4 mm. long. . . . . *E. semivestita* var. *semivestita*
- AA. Entire plant in all its parts wholly glabrous. . . . . *E. semivestita* var. *floresiana* var. nov.

*E. semivestita* var. *semivestita*

**Literature:** *E. semivestita* R. Moran, Cactus Journal 26: 2: 60, 1954.

**Illustrations:** Cactus Journal 26: 6: 174-175, fig. 112-113, 1954.

**Type:** UC: 985641. **Type-locality:** Near Pan-American highway 25 miles north of Zimapan, Hidalgo.

**Occurrence:** Mexico, Hidalgo. (Type as above), also H. E. Moore 3417 (Bailey Hortor-

ium), on limestone in pine-oak woods, Puerta de la Zorra, near kilo 284 northeast of Jacala at 7 to 8,000 ft.; H. E. Moore and C. E. Wood 5953, roadbank between kilo 294 and 296, on highway near Cherimoya, between Jacala and Santa Ana.

**Description of var. *semivestita*:** Substantially as described above, but stem, leaves, lower part of peduncle and bracts puberulous with simple hairs.

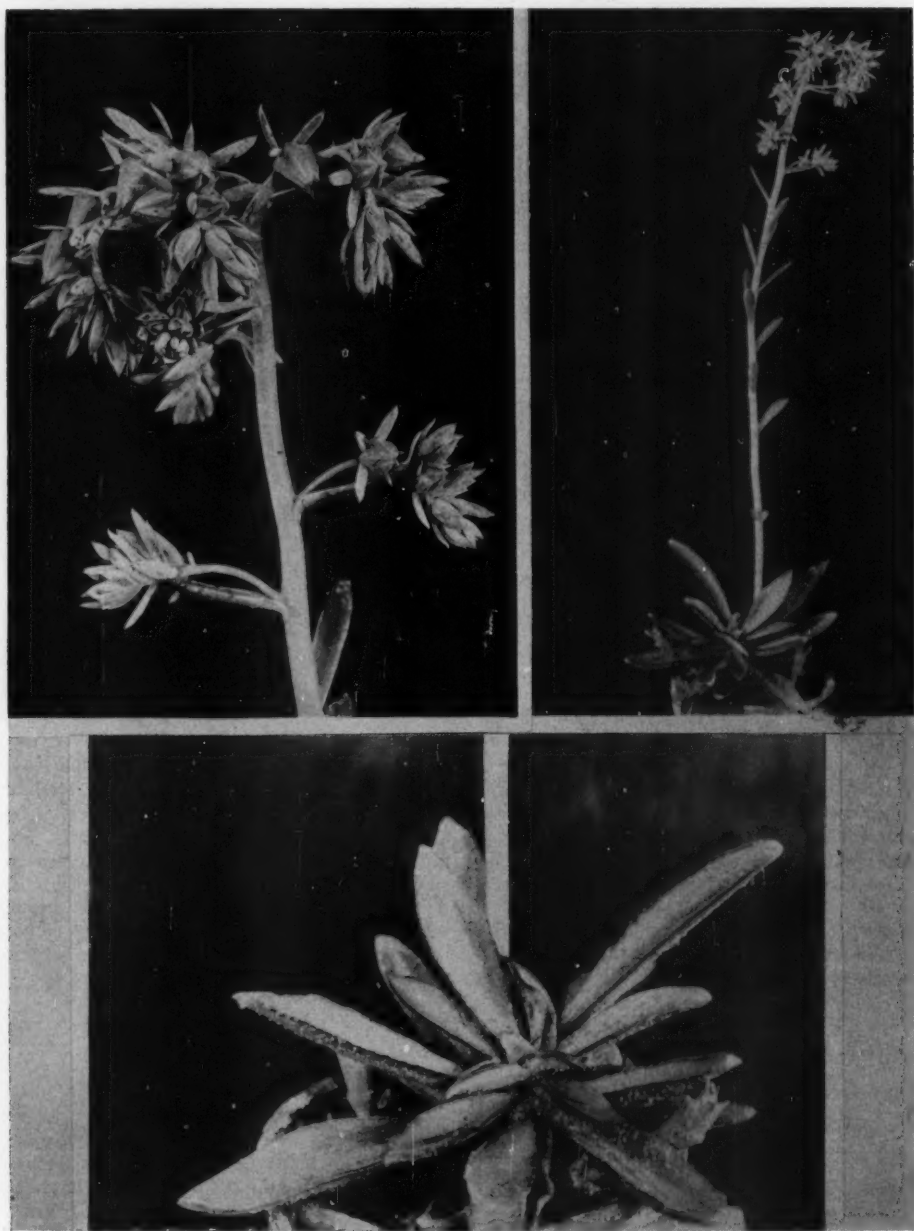


FIG. 56

*Echeveria semivestita* var. *floresiana*. (upper right) flowering plant. (upper left) inflorescence.  
(below) leaves.

*E. semivestita* var. *floresiana* var. nov.

Caudicibus, foliis, pedunculis et bracteis glaberrimis, haud puberulis.

*Type*: CAS: 332306. Cultivated at the Strybing Arboretum in Golden Gate Park, S. F.

*Occurrence*: Type collected by R. Flores along International highway, near border of San Luis Potosi and Tamaulipas, at rather low elevation.

*Description*: Similar to var. *semivestita* except that plants are wholly glabrous in all their parts; caudex evident with age, usually simple; leaves often minutely undulate at lower margins; lower bracts straight, ascending, 30 to 35 mm. long; nectaries to 2 mm. wide.

*Color*: Leaves light-cress-green, edged dark-cornithian-purple, beneath Rainette-green tinged dull-indian-red; peduncle deep-chrysolite-green; bracts as the leaves but somewhat paler; pedicels onion-skin-pink; sepals light-celandine-green to vinaceous-brown, glaucous; corolla jasper-red, somewhat glaucous, inside light-coral-red; carpels and scales pale-yellowish; styles jasper-red.

*Remarks*: An accurate determination of the relative rank assigned to various forms becoming known is of course a matter of personal judgment. Such an opinion is not mere caprice, but should always be based on full and complete knowledge of the genus involved throughout its range, an essential prerequisite which is far from having been achieved in the genus *Echeveria* today. Our new variety here described furnishes an excellent illustration of the considerations involved in such judgment, for while elsewhere the presence, or absence, of hairs is sufficiently important to lead to the creation of a distinct section of the genus, here it is a very minor matter. The two forms of *E. semivestita* agree in practically every detail, except the sole character of hairiness. According to information furnished us through the kindness of Dr. Charles H. Uhl, the basic chromosome number in both forms is  $n:17$ , which, interestingly enough, is that found in our native *Dudleya*, and otherwise totally unknown in *Echeveria*.

Our material of the variety *floresiana* was furnished us by Mr. R. Flores, now of Salinas, who found it during one of his various collection trips to Mexico. We had hoped to publish this as a species, but were anticipated by Dr. R. Moran. In its paniculate inflorescence with numerous secund branches and in its relatively few leaves, these plants clearly should come within our Series *Retusae*; while without flowers it may recall *E. schaffneri*, which of course differs in its strictly sessile flowers and fewer branches. *E. maculata* Rose, too, is somewhat similar, but has fusiform roots, a very short caudex, and flowers often borne singly on the upper pseudopedicels.

It should be noted here that the air-line distance between the respective type-localities is less than 100 miles.



FIG. 57

*Echeveria semivestita* var. *floresiana*

- a. side view of corolla x 2
- b. base of calyx x 2
- c. inside of petal x 2
- d. tip of petal x 8
- e. carpels x 2
- f. nectary, front-view x 8
- g. nectary, side-view x 8
- h. leaf x 0.4
- i. bract x 0.4

## NEW SOCIETY TO DISTRIBUTE PLANTS

A non-profit organization has recently been formed in Central California, for protective, educational and succulent plant distribution purposes. Their aims and purposes will be to foster and facilitate the exchange of plants and plant material; to encourage and provide a means of making succulent plants available to all interested persons on an international basis; to promote the preservation of species from many parts of the world which might otherwise become extinct; to provide facilities for growing of succulent plants for eventual distribution; to secure and to introduce new and interesting species of succulent plants.

It is proposed that all funds received from, donations, endowments or from the sale of plants or plant material, will be used for the expenses incurred in handling and shipping these plants or to secure further material.

A list of cuttings, seeds and plants offered at this time may be obtained by writing the Secretary, J. W. Dodson.

International Succulent Institute  
921 Murchison Dr.  
Millbrae, California



FIG. 58. Partial view of the 40-acre cactus farm

## CACTUS APPLES FOR MARKET

By GORDON L'ALLEMAND

*Photos by author*

Just outside Lakeside, California, in the drought-ridden Cajon valley some 22 miles east of San Diego you come upon a great broad stretch of green growing over the rolling rock-crested hillsides and the river valley.

This expanse of green in all this dry, yellow world is a farm where cactus apples are raised. One of the world's most unusual fruits, called the cactus pear, cactus apple. Shaped like a huge egg four inches long, it has a sweet meaty interior that tastes like apples, pineapples, cooked apples, and smells heavenly. The protective skin is tough and armed with fine spines.

This 40 acre farm, highly cultivated, sells its 20 to 25 carloads of cactus apples to people of the Mediterranean races in the northeastern part of the U.S.—New York City, Chicago, Detroit etc. Three varieties of the fruit are grown on this farm: a dark red, a rich yellow, and a peach colored fruit interior.

Back in the early 1920's Bernardo Maniscalco

came from his native Italy bought up this ranch and started planting the *Opuntia* cactus for the fruit market. The cactus was then being grown for supplementary cattle food. Maniscalco and other Italian friends began by leasing, later buying land at Lakeside, and planting the fruit bearing cactus. He built the cactus orchard up to its present fine production level, and has long since turned the management of the ranch over to his sons: Joseph, Sam and Leon.

This species of *Opuntia* cactus has a high sugar and water content and a delightful texture. The fruit is eaten by cutting off the ends, then making a cut down one side of the pear and spreading the skin back and eating the delicious fruit. The fruit is eaten fresh out of hand, or in salads, and in jams and jellies.

The huge long rows of fruiting cactus plants are laid out on 20' centers, carefully cultivated, fertilized almost entirely with natural manures and compost (as it gives better flavors), and





FIG. 60. Picking the fruit for market

watered with revolving sprinklers and portable pipes for irrigation.

The cactus plants grow prodigiously and must be cut back to keep from filling the rows in the centers where the tractors move along. The farm is a flower lovers' delight in May-June-July when the place is a mass of bloom, and millions of bees hover everywhere. Later when the apples form Mexican field workers go along the rows and thin out the apples to improve size. Spraying for San Jose scale and other pests is done regularly.

The cacti, which have about a 20-year life span, are planted in long rows, broken by field roads for trucks collecting the boxes of fruit that will be collected by the field pickers.

Cultivated for centuries in Southern Europe, Northern Africa and the Canary Islands, the cactus will not survive extremes in temperature. The San Diego area seems to be perfect. Harvesting as well as all other field work is done by Mexican workers attired in heavy canvas suits, leather gloves. The leaves and fruits of these cactus plants are well armed with the treacherous spines.

As the plants grow it becomes necessary for the workers to use ladders to get at the upper fruits. After many years when the cactus plants get too heavy and too high some of the rows are

cut down, let rot, and plowed into the ground as fertilizer. Young pads are then planted in the rows.

The plants enter commercial bearing at about 4 to 5 years age. The Maniscalco brothers keep up a steady fertilizing program to keep the soil rich. They use largely horse and cow and poultry manure procured locally.

When the Maniscalcos started raising the fruit they had no way to get the terrible spines off the apples. Now they have a machine which "de fuzzes" the fruit with rubber fingers, something like a poultry picking machine. It does a clean job too.

Harvest time is August through September. The filled field boxes are trucked to the ranch packing plant where they go through preliminary cleaning and grading before going through the brush friction machine. The beautiful red, yellow, or peach colored fruits are then wrapped in tissue papers and packed into two-layer flats by a ten-woman (Mexican women) packing crew.

These cactus apples have seeds somewhat like the youngberry, but much larger. These are supposed to be swallowed without being chewed. It is claimed that this cactus fruit is an aid to digestion, something like the papaya.



Fig. 61. Grading and inspecting the fruit

Following is a recipe for CACTUS FRUIT JELLY:

3½ cups (1¾ lbs.) cactus fruit juice  
¼ cup lemon juice  
7½ cups (3¼ lbs.) sugar  
1 bottle liquid pectin

To prepare the fruit juice remove fruit from skins as told early in article, from about 3 pounds of fully ripe apples. Cut fruit centers or meat in small pieces and crush. Add one cup water, bring to boil, and simmer covered for 10 minutes. Place the cooked fruit in cloth or jelly bag and squeeze out juice. Squeeze and strain juice two medium lemons. Measure sugar and fruit juice into large pan and mix. Bring to boil over hottest fire and at once add liquid pectin, stirring constantly. Bring to full rolling boil and boil hard for ½ minute. Remove from fire, skim, pour into sterilized jelly glasses. This recipe makes about 10 jelly glasses.

Opinions on the taste of these cactus apples vary: Some say they taste like watermelon hearts, some like papayas, some like pineapple preserves.

The growing of the fruiting cactus is not new.

The Southwestern Indians knew it as *Tuna*, and have used it as a food source for centuries. The Spaniards called it *el nopal*, from the Aztec name, *nopalli*. The Franciscan padres planted it around the missions for fruit, food, and fences. The oldest mission in the U. S. today is Mission San Diego, and its cactus pear hedges are as green and sturdy as ever, after the centuries.

These fruit-producing *Opuntias* cannot stand frost. Mexican and Italian peoples cut off the young fleshy green pads, burn or scrape off the spines, and roast, or cut into strips or cubes to boil or fry. These tender green pads are known to them as *Los nopalitas*. Seasoned, they taste something like okra. Smaller pads may be dipped in batter and fried like savory fritters, then folded into a tortilla and covered with chili sauce and sprinkled with grated cheese. These tender pads are often canned.

Other uses for this *Opuntia* cactus plant include a powerful glue that is made from the viscous juice of the pads. The juice has been used in dyes. And many Southwestern Indians, Mexicans and country folk use the fruit medicinally.

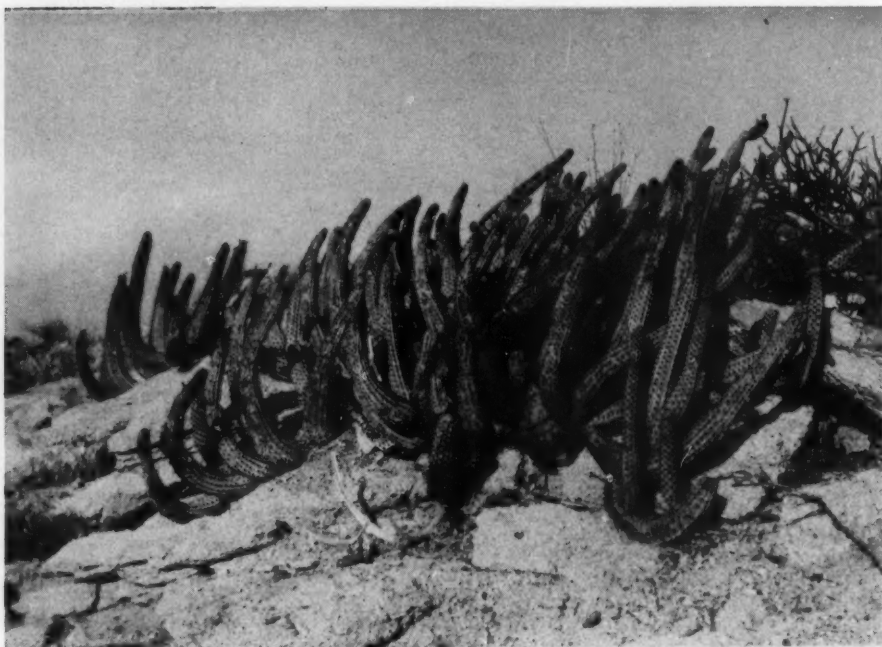


FIG. 62. *Lemaireocereus littoralis* near Cape San Lucas, Baja California. Photo George Lindsay

## THE DWARF PITAHAYA DULCE OF BAJA CALIFORNIA

By HOWARD E. GATES

*Lemaireocereus littoralis* (K. Brandegee) Gates, comb. nov.

*Cereus thurberi* Engelm. var. *littoralis* K. Brandegee, Zoe 5:191. 1904.

This interesting dwarf *Lemaireocereus* occurs at the very tip of the Baja California peninsula, in a narrow coastal band between Cabo San Lucas and San Jose del Cabo. The plants are always less than three feet tall, and usually have many small branches, less than two inches in diameter, arising from the base. Flowers, which have been observed from May through July, are little more than one inch long and are deep pink or red. The flowers are nocturnal and wither when the sun strikes them. Fruits are red, densely covered with spines, usually less than one inch in diameter, and have good flavor.

*Lemaireocereus littoralis* looks much like a miniature *L. thurberi*, or "pitahaya dulce" or "organ pipe", and some authors have assumed that it was a form of that species stunted by conditions peculiar to its coastal habitat. This is not the case, because normal-sized specimens of *L.*

*thurberi* grow with *L. littoralis*. There are no intergrades. Specimens of *L. littoralis* collected by George Lindsay in 1937 have since grown at the Desert Botanical Garden of Arizona and retain all their distinctive characteristics.

The dwarf pitahaya was probably first collected by T. S. Brandegee in 1892 and was described as *Cereus thurberi* Engelm. var. *littoralis* by Katherine Brandegee in Zoe 5:191, in 1904. Britton and Rose did not know the plant and included the name in the synonymy of *Lemaireocereus thurberi* (Cactaceae 2:97, 1920) with the note "In the Cape region of Lower California a slender form is found which has been described as a variety." I found the strange little pitahaya on my first collecting trip to the Cape region in 1930 and mentioned it using the name *Lemaireocereus littoralis* in this Journal (3:3-4) in 1931. However, I did not intend to make a



FIG. 63. The flower of the dwarf pitahaya is only little more than an inch long. Photo George Lindsay

taxonomic change and did not cite the original reference. George Lindsay, in an article in *Desert Plant Life* (12:186. 1940) stated "An interesting form deserving at least varietal rank, is *Lemaireocereus thurberi* var. *littoralis* (K. Brandegee), which, as the name implies, is a littoral form found only in a narrow coastal band between San Jose del Cabo and Cape San Lucas, Lower California." Lindsay's reference was included incidentally in an article about *Lemaireo-*

*cerus thurberi*, and he had no intention of proposing a new combination. However, both these names were picked up in the Gray Index, which could lead to confusion in the future. The present publication is to validate the name *Lemaireocereus littoralis* (K. Brandegee) Gates.

EDITOR'S NOTE: We regret that we were unable to get the above article into print before the author's death last October. These notes will validate the name of a cactus in which Howard was interested.



FIG. 64. Left: The grass land in which *Opuntias* were abundant. Right: Close-up of a plant.

## Cactus in Indiana

Indiana is not usually thought of as the home of the cactus. With a rainfall of 35 to 50 inches and sub-zero weather during the winter, the "Hoosier State" would not be expected to be a place to look for plants which are normally considered to be found in hot, dry deserts. Despite the apparent lack of suitable habitats, Indiana has, like all the other states except Maine, New Hampshire, and Vermont, a species of native cactus, a low-growing prickly pear called *Opuntia compressa*. Since almost all of Indiana is farmland or forest, this cactus is restricted to certain local areas. In these areas are found the condition that the cactus needs in order to survive the high rainfall and winter cold.

One of these areas is located in north-central Indiana near Lafayette, Indiana. This species of prickly pear is recorded from the northern part of the state in sandy areas near Lake Michigan and a few other areas in the northern part of the state and in many localities in the southern counties. This place is one of the few in the more central part of the state and, therefore, was quite interesting to visit.

Upon reaching the area, a grassy, south facing slope, the cactus was found growing abundantly among the dry grass. The plants were so common, in fact, that it was hard to avoid stepping on them. The joints of the plants were shriveled and limp from the combination of a two months drought and the normal loss of water in the fall which prevents their being damaged by freezing weather. Many of the plants had several purple fruits. We tried a few of them and they had a

refreshing acid taste, but seed composed most of the fruit, there being little pulp.

The grassy area where the cactus is found is small in extent and limited by oak woodland and cultivated fields. There are very few trees in the places where the cactus is found. The reason for this and the fact that the cactus is so common here is that the soil is very sandy and about two or three feet down there is a layer of coarse gravel. With this almost perfect drainage and the slope facing south, it is easy to see that there would be times when water would be lacking. This natural condition is almost exactly the same as that used in cultivation of these plants, a sandy soil with gravel in the bottom of the pot for drainage.

There are several other interesting aspects about this area and its vegetation. One is the occurrence of this cactus so far from other places where it is found. It is interesting to speculate by what means the cactus has spread from place to place. Most likely it is spread by birds or it is possible that this cactus had a wider range in the past and now can grow only in these local areas due to a changing climate or to the cultivation of the state in the last hundred years. Another interesting thing is the occurrence of certain wild grasses in this small area. There are grasslands in this part of the state, but the species of grass found here are the kinds found on the western plains and some are not found elsewhere in Indiana. It would seem that the conditions at this place are similar to those found out on the plains where the cactus is more at home. Thus, one can

see why the cactus is found at these locations, these are the only places where the conditions are right, for a cactus, at least.

This area is quite small and is getting smaller. A good part of the grassland was destroyed and turned into a sandpit. At present, the cacti are restricted to roadbanks and other small areas. Farming and grazing have also reduced these grassy spots even more and it is doubtful how long the cactus will remain a part of the flora of this region.

TIMOTHY A. GASKIN  
Rt. L, Lafayette, Ind.

Formerly Purdue Univ.  
Department of Botany

### QUESTIONS and ANSWERS

Conducted by  
HARRY JOHNSON  
Paramount, Calif.



June 19, 1958

*Question:* Can you give cultural directions for growing Cacti in California? Most instructions are for eastern conditions.

MISS A. W. JONES  
Claremont, California

*Answer:* Growing cacti and succulents in California is quite simple although one must forget a large part of what one has read of greenhouse or window garden culture. The plants like the out-of-doors where there is always a good circulation of air and plenty of sunlight. Under such conditions they will take more water than in greenhouse or window and during the spring and summer quite a bit of fertilizer. A good loam soil, not too sandy, is best. Even adobe soil grows them well if there is reasonable drainage such as provided by a slight slope or a raised bed. The only preparation needed is to spade the bed well and then plant. Some form of mulch should be provided. The mulch may be of two kinds: either organic or pebbles. An inch or inch and a half of dried cow manure is one of the best of mulches for both cacti and succulents; the growth after applying such a mulch is astonishing. This probably will shock the traditionalist. The growth is quite normal and you will often find poor, scarred specimens become beautiful plants. A pebble mulch is excellent also. It has the advan-

tage of looking well and of being fairly permanent. Number 5 crushed rock, sometimes called squeegee, such as is used for surfacing highways is serviceable and is what is used by commercial growers for surfacing flats or containers. Also there is marketed pumice rock which may be had in various colors as gold, green, rose, white. This type of rock is very useful where formal or geometrical designs are being worked out.

The reasons for some kind of mulch are cogent. The roots of cacti and succulents in most cases are fibrous (there are many exceptions) and generally near the surface where in their native lands they can take instant advantage of even the lightest rains. I have found during collecting expeditions the natural surface of the ground is almost always covered by leaves from surrounding bushes or by rocks or pebbles or in many cases grass. Protecting the surface of your cactus bed is thus only giving them a simulated natural condition to which they will respond most gratifyingly. It has additional advantages for your beds will need far less watering and the weed problem may be reduced almost to zero in the case of rock mulches. Bare soil gets very hot in summer and the surface feeding roots are killed. Under the mulch it stays moist longer and is always much cooler.

In regions away from the coast some cacti need a little protection from the full sun such as being planted on the north side of a large stone. These are generally mountain species as some *Rebutias*. If they are well mulched they can take much more sun.

Watering should be done regularly. Not as much for normal hygrophilous plants but neither should they be allowed to become desiccated. Some of the finest specimens I have seen were sprinkled overhead several times a week. I would not recommend it to the beginner but it shows there is a wide latitude of thought on the subject. Personally I water whenever the soil becomes moderately dry which seems to suit a wide variety of cacti from many diverse regions.

The general inclination seems to be either to over-pamper the plants or to be afraid to treat them generously after having lost some by over-watering. If the plants are free from pests and have good root systems free of nematodes they should respond to normal garden treatment. After they are thoroughly established they can go long periods without water and survive, plumping up when watering is resumed.

ED. NOTE: Send your questions to Harry Johnson, Johnson Cactus Gardens, Paramount, Calif.

## Cactus from Seed

From "Cactus Digest"

Cactus grown from seed can be very rewarding and a source of pleasure and enjoyment. You don't know what you are missing until you've tried it. Only thing is that you have more cactus than you'd planned on or have room for. It's not that they're hard to give away, you just hate to part with them all. Each one looks so perfect and is adapted so well to your particular growing methods.

I started "growing my own" about four years ago when some seeds were sent me in a letter from Oklahoma. They had been collected from a wild cactus out on the desert. I had heard stories on how hard cactus were to grow from seed and figured I was doing well to keep my 100 or so cactus plants alive and growing and leave well enough alone when it came to growing cactus from temperamental seed. But with these seed sent me, I figured I had nothing to lose and would you believe it, every one germinated and grew to be nice-sized plants (I have since given them away). Since the "ice" was broken, so to speak, I decided to try some seeds from some of my own plants which had seed pods for the first time. These were *Mammillaria bocasana* and *Rebutia minuscula*. Soon more of my cactus were sending out seed pods and I had surplus, so I began to trade seed with my cactus pen pals. This year I have received seeds from England and sent to Germany for some "hard to get" ones. All are coming along fine and I am still using my original method of growing them—in tuna fish cans.

Quite often I have only one plant of a species (say *Notocactus rutilans*) so when this plant opened two large pretty pink flowers at once, I mixed the pollen and seed was set. Nearly all I gave away or traded and seeded the remainder. From this seed planted September 1955, I have seven husky seedlings. Seeded at the same time were *Notocactus haselbergii* from which I have 18 beautiful white-spined seedlings over an inch across now. *Notocactus* seed germinates nearly 100 per cent. Of the seeds I've planted I find that *Notocactus*, *Rebutia*, *Lophophora*, *Aylosteria* and *Mammillaria* are the easiest—they germinate quickly (anywhere from six days to two weeks) and the seedlings come right along steadily. Also, these can be seeded as soon as mature whereas others will have a higher germination count if not seeded for from six to eight months or longer, i.e. *Echinopsis*, *Gymnocalycium*, etc. Fall seems an odd time of year to start cactus seeds, but I've had good luck with those that can be seeded as soon as matured,

probably because we have a good deal of sunshine at this time of the year, too. Some of the smaller growing cactus can be flowered when quite young. Two out of six *Mammillaria longicoma* seedlings, seeded September 1954 were budded in January 1957 and bloomed soon after. Of thirteen *Gymnocalycium damsii* seedlings (growing in a bread pan) seeded August 1954, nine plants have blooms and buds totaling 41. the largest plant of the thirteen is only 1 3/4 inches across, the smallest 1 1/4 inches. Of two *Rebutia minuscula* seedlings of September 1954, one had three blooms this spring, the other five. Next year I hope to have some of my later seedlings in bloom, like *Mammillaria candida*, *M. carrettii*, *M. macdougallii* and *Aylosteria kuperiana*. Growing cactus from seed is a wonderful way to increase those that one especially favors and would like more of, and the cost is nil if raised from seed from your own plants.

My seedlings are grown in tuna fish cans. Using a small nail, about 20 or 30 small holes are hammered in the bottom of the clean cans. Then I begin mixing a planting medium of one-third leafmold (at the present I am using Cottonwood), one-third sand and one-third loam. When this is thoroughly mixed and dampened and mixed again, a layer of small gravel is first placed in each can to cover the holes to prevent the soil mixture from sifting through. Then the soil mixture is spooned in to within 1/2 inch of the rim and the soil sprinkled with warm water. The cans are set in a preheated oven of 200 degrees F. (along with a can of fine sand) for two hours. This kills most of the weed seeds and harmful bacteria in the soil. Let the cans sit a day to be sure they are thoroughly cooled. The cans are divided into fourths when I begin to seed. It is best to seed four different genera in one can because it is easy to tell genera apart while they are small. When I plant four different species of *Rebutia* in the same can I first divide the area with strips of aluminum foil. As each species is seeded the genera, species and date is written on a small strip of paper and scotch taped to the corresponding fourth of the can. The previously sterilized fine sand is sprinkled over the seeds to just barely cover them, then each can is set in a saucer of quite warm water until the soil is damp on top. Next a piece of wax paper is secured in place with a rubber band around the can on the south exposure of the can. This keeps the direct rays of the sun from a west or south window (where I set them) from falling on the seedlings until they are of a good enough size with spines. Each time the soil barely begins to dry out set the cans in a saucer of quite warm water. The temperature of the water helps speed germination. Six months after they are seeded I usually transplant for the first time.

As I write this (October 4th) we have not yet had a killing frost, but the past week has been quite cold and cloudy with precipitation in the form of half snow and half rain, so all the cactus have been brought in and squeezed onto my small back porch. They will stay there until I can get each plant sprayed for hidden red spiders and mealy bugs, etc. Then they'll be put on various window shelves throughout the house, which is their winter quarters. In bloom today are *Echinopsis* hybrid "Red Paramount" with a beautiful fragrant red flower, four *Mammillaria hahniana*, each with a circle of fuchsia flowers, *Mammillaria schiedeana* with white flowers, *Gymnocalycium gibbosum* with a white flower, twelve white flowers on the *Gymnocalycium damsii* seedlings and both the white-spined and red spined *Mammillaria spinosissima* have a ring of large fuchsia flowers out. There are buds on *Mammillaria bombycina*, three *M. werdermanniana*, *M. elegans*, *M. rekoii*, very beautiful yellow-spined unnamed pincushion, *M. conspicua*, *M. rhodantha* and a two- and a three-headed *M. karwinskiana*. My *Zygocactus* with "claws" is full of buds already.

Our stay here at Klamath Agency is fast drawing to a close and we expect to be transferred to Washington by Christmas. My husband has nearly completed appraising the Indian allotments (lands) so that phase in the termination program will soon be finished. The Agency here where we live is practically a small village in the

midst of tall trees (three Ponderosa Pines, each 500 years old, stand in our front yard). The largest is 12 feet 7 inches in circumference, the next 12 feet 6 inches, and last 11 feet 11 inches. I know—I measured them all. All are about 200 feet tall. There are 32 houses, a small clinic, post office and the large office building where the business of taking care of the interests of the Klamath Indian tribe is carried out. The Klamaths are a proud and intelligent race and practice none of their old customs. They have vast holdings of valuable timberlands. The reservation is bordered on the west by Upper Klamath Lake, the largest fresh water lake west of the Mississippi. The western shore laps at the base of the Cascade Mountain Range. The lake is about five miles wide and fifteen miles long and is on the Pacific migratory waterfowl flyway and attracts many millions of ducks and geese. Scenic Crater Lake is located 31 miles north of us, and a thriving farming and lumbering town of 20,000 people is Klamath Falls, 33 miles south of us.

I hate to think of moving my 500 or so cactus plus all my sprawly *Epiphyllums* which have tripled their growth since we've been here, but I guess we'll make it. It will be a new experience growing cactus in the rainy and sun-shy climate of Washington state.

MRS. JOHN L. VANINETTI  
Klamath Agency, Oregon



FIG. 65. Part of the exhibit of the Wanganui Cactus and Miniature Garden Society at the annual conference of the New Zealand Parks and Reserve Superintendents in conjunction with the Royal N. Z. Institute of Horticulture. This was the largest floral fair ever held in Wanganui and of three days duration. The exhibit was considered to be the largest display ever shown in N. Z. and was one of the highlights.—A. WEBER TODMAN, 49 Dublin St., Wanganui, N. Z.

## APRIL VACATION IN ORGAN PIPE

By WM. B. BENTLEY

My wife and I and our three small children fulfilled our long thought of plans by spending Easter in Organ Pipe Cactus National Monument. This was our first visit into this beautiful, awe inspiring cactus country. Every minute of our trip was thoroughly enjoyed to the utmost. Viewing this vast cactus garden, an area nearly half as large as the state of Rhode Island, was comparable to nothing I had ever dreamed of before.

The children, Annabel 4, Clifford 6, and Buddy 7, weathered the adventure like veterans. After we were camped and settled, they were right with us on every scenic hike we took, and believe me, a day never went by in which we didn't take one or two hikes up the side of a

high peak or through some sandy canyon dotted with creosote bushes and thickets of palo verde.

Everywhere we went our wandering gaze took in some form of cacti, small and large alike; from the majestic *Carnegie gigantea* and *Lemaireocereus thurberi* to the tiny *Mammillaria microcarpa* and the attractive spined *Echinomastus erectocentrus*. We found delight in comparing the differences of *Ferocactus covillei* and *F. wislizeni* which were very colorful and plentiful. Also, we gleaned much pleasure in admiring the rarest cactus in the monument, *Lophocereus schottii*, locating some twenty large plants altogether. Stands of *Opuntia bigelowii* and others were in evidence all over. We were

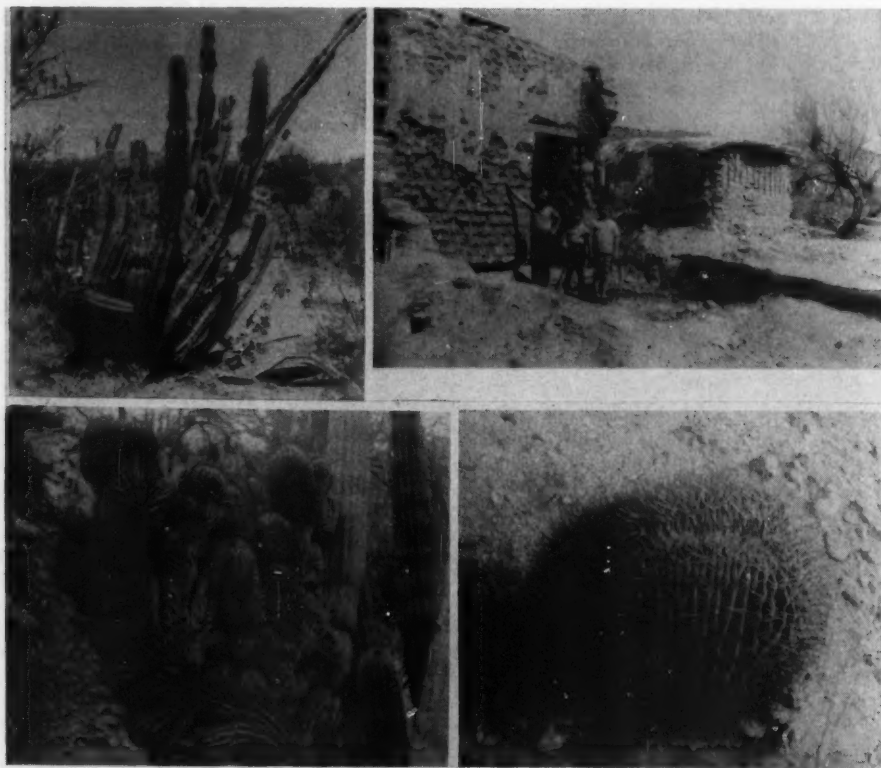


FIG. 66. Upper left: *Lophocereus schottii*. Upper right: Adobe ruins at Quitobaquito. Lower left: *Lemaireocereus* crest. Lower right: *Ferocactus covillei* crest. All photos taken in the National Monument

very happy to witness the plumpness in every species of cacti brought on by the heavier rain-falls recently. Quite different from witnessing many burnt out plants caused by overlong dry spells in previous years.

The Monument is bordered by the Sierra de Cubabi off to the south in Mexico, to the west are ranges of the Growlers and Agua Dulces. Between these bold, rugged mountains lay La Abra and Sonoyta valleys, bursting with Sonoran vegetation, carpeted with masses of wild-flowers, and where there has been identified over thirty species of cacti.

In 1539 the monument was visited by Esteban the Moor and de Niza the priest, followed in 1540 by Coronado and his conquistadores in search of the Seven Cities of Cibola. The Jesuit

explorer priest, Padre Kino, in 1691 established San Marcel, as a visita of Caborca Mission, near the village of Sonoyta, Mexico only five miles from the Monument headquarters.

An 18-mile and 40-mile loop road starting from headquarters allows the tourist access to many remote and scenic places including Dripping Springs and the historic Quitobaquito pond where little known aquatic plants and animals live, attracting scientific men from great distances.

To us, my wife, children, and myself, Organ Pipe Cactus National Monument is a truly magnificent area of land which no lover of cacti should ever leave unvisited.

6324 Bear Ave.  
Bell, California



I enclose a picture of an incredible cactus. This is a healthy, thriving *Cereus* seedling which has been growing in osmunda fiber for over fifteen years. It came up spontaneously in a hanging basket of a *Stanhopea* orchid which has survived in a deteriorating pack of unrenowned osmunda since 1940-1943. It is not too hard to understand that the orchid has survived because it is at home in decaying forest debris. But that a desert-type cactus has also thrived in these conditions makes one ponder the great powers of adaptability within both the cactus and the orchid, coming from such diverse habitat areas. The basket has been suspended in a dark alley under glass all these years and was in such a position that it has never received much water and has had no care. We can hardly believe it and we are filled with great admiration for both plants. Survival is a very dominant factor in these amazing plants.

RACINE FOSTER, Orlando, Fla.



FIG. 68. *Navajoa peeblesiana* Croizat, from this Journal XV:88, 1943

## Rediscovery of *Toumeyia*

By DENNIS COWPER

From "Saguaroland Bulletin"

The first rediscovery which we made of *Toumeyia* (*Navajoa*) *peeblesiana*, resulted, not from any planned expedition, but from frustration and bad weather. I had intended to spend the Memorial Day weekend of last year tracking down some rumors which I had heard of a small barrel cactus with yellow flowers growing in the neighborhood of B'staya on the Navajo reservation between Crownpoint and Farmington with the hope either that it prove to be a new species, or to extend the known range of *Coloradoa mesae verde*. Leaving Saturday noon, we travelled west from Belen to Thoreau on U. S. 66, and thence north over a series of diminishing trails to White Rock where we camped under some sandstone cliffs. Everything was fine until about 5 a.m. Sunday morning when the wind started to blow. From then on it was sheer misery. The trail from White Rock to Farmington by way of B'staya is very faint and hard to follow even under the best conditions; in a sandstorm it is non-existent. All day long we wallowed from one dune to the next, frequently having to dig the pickup out when it went over the axles, and finally, towards evening, we came out at Farmington without hav-

ing had an opportunity to look for anything. The wind was still blowing with a promise of continuing indefinitely, so I abandoned any idea of collecting around B'staya that weekend, and, in the hope of getting well away from the wind, we set out for Holbrook with some vague thoughts of looking for *Navajoa* the next day. Arriving at about midnight we camped on some sandhills east of town and prayed for a calm day.

Monday dawned hot and still, and by 7 a.m. I was crawling up a hogback on the south side of Marcou Mesa about two miles west of Holbrook. Applying tactics which had proved successful in turning up *Toumeyia papyracantha* in widely scattered locations in New Mexico, I was travelling on hands and knees, peeping under every blade of grass. After some hours of crawling I found a minute plant, about the size of a kitchen match head, which I thought might be a *Navajoa*. I was soon disillusioned when I came on a colony of dwarf *Sclerocactus whipplei* with seedlings amongst them just like the one that I had found. By noon I had reached the base of a hill facing Leroux Wash, and, since it was very hot, I left everything but essentials

and continued crawling less encumbered. Four or five hours later, somewhat disheartened, I returned to my pile of belongings and was about to leave, when I noticed a small round plant growing beside a bunch of grass just a few feet away. At first glance it looked like a sickly *C. whipplei*, but, on closer inspection, it proved to be a Navajoa, somewhat misshapen from an old injury. Unable to believe my eyes I peered at it for several minutes before its reality dawned on me. With a wild cry of "Eureka!!" I snatched it up and proceeded to comb the hillside, nose to the ground, in search of its fellows—to no avail. Darkness forced me to abandon the hunt as I had no flashlight with which to continue.

About two weeks later I returned to the location with my wife, Jane, to resume the search. We started at the cairn which I had built where I found the first plant, but, before we had been there very long, the wind came up, and blowing sand, especially at ground level, made further search impossible.

We did not again have an opportunity to visit Holbrook until Memorial Day of this year. We made rendezvous with Mr. and Mrs. Edsel Grey of Santa Fe, also ardent collectors, and early Monday morning we set off up the east bank of Leroux Wash hoping to find a crossing upstream which would take us onto Marcou Mesa from the north. We were unable to reach our objective and spent the greater part of the day climbing sandy hills without reward. By mid-afternoon we returned to Holbrook and again started looking in the neighborhood of the ori-

ginal cairn. After about an hour I found a dead Navajoa lying on the ground about a mile south of the spot where I had found the first one, and, upon a minute inspection of the ground, I found a live plant growing within a few inches of it, which I had till then overlooked as it was covered with a film of sand. I built a cairn and went to fetch the others. Unfortunately the Greys were unable to stay longer, but my wife and I returned to the spot, and by dark we had found three seedlings growing under *Artemisia* bushes within a few feet of the cairn.

A few weeks later we exhibited one of our plants at the Convention of the Cactus and Succulent Society at El Paso, and Mr. Marshall offered to help finance the trip if we would go back and gather some plants for the Desert Garden. Naturally we accepted.

On Saturday, August 13, we set out from Belen a little after noon. Since we knew that we could not reach Holbrook in time to do much searching that evening, we detoured south from Gallup into Zuni country to investigate a reported location for *Mammillaria wrightii*, and were rewarded by finding that plant growing in great plenty amongst the pinons. They were larger than in other New Mexico locations and with comparatively scant spination.

We spent Saturday night in Holbrook and started out at dawn with an earnest intention to find Navajoa in quantity. First we devoted some six or seven hours to scouring the hills immediately east of Holbrook and south of U. S. 66, and those immediately south of the Little Colo-



FIG. 68. The eight plants collected by Mr. and Mrs. Dennis Cowper

rado, both without success. Then we tried getting onto Marcou Mesa on the road a few hundred yards west of the inspection station. Unfortunately it had been raining and the pickup went axle deep in mud. With the aid of a shovel, a bumper jack, much effort and corrosive language, we emerged some two hours later with a coating of camouflage which rendered us indistinguishable from the mud hole.

Undaunted, we tried again a few miles further west, and this time we managed to get through to the mesa. Before leaving the truck we fortified ourselves from a jug of wine which we had provided against such emergencies, and then again sallied forth. There was little or no wind and it was blisteringly hot, but, by refreshing ourselves periodically from the jug, we managed to survive the two mile climb over the crest. We knew from our previous experience the type of terrain in which to look for Navajoa, and, on the fifty-third likely looking slope, about five miles south and east of the crest we found them in relative plenty. There were numerous colonies containing several individuals each, all swollen up from the recent rain and washed clean of dust so that they were visible even from a standing position. Some were growing in the open amongst the gravel and others under the *Artemesia* bushes. Those in the shade were rather columnar, while those in the open were appanate and superficially resembled seedlings of *E. horizontalis*.

After spending the balance of the afternoon examining the different colonies, we discarded the empty jug and returned home well satisfied that we had located *Toumeyia* (Navajoa) *peeblesiana* with sufficient certainty that we would have no difficulty in returning to collect further plants at a later date if it should prove necessary.

***Toumeyia peeblesiana* (Croizat), Marshall**

Reprinted from "Saguaroland Bulletin"

In the *Cactus and Succulent Journal* XV:88, 1943, Leon Croizat published as a new genus and species under the name of *Navajoa peeblesiana*, a plant collected some years before by a Mr. Whittaker of the Arizona Highway Department.

The plants collected by Mr. Whittaker and associates, including our member Monte Lebert, were found on some hills north of the plant inspection station at Holbrook, Ariz., and only two of them survived the first year in captivity, and these two only because they were grafted.

Croizat evidently published on the basis of one of the grafted plants (see illustration which accompanied the description) as his description tallies with that of a similar grafted plant in our collection propagated from offsets from one of

the two original plants by J. Whitman Evans of Phoenix. Croizat's description does not agree in several important details with the collected plants we now have.

Between the time of the first collections by Whittaker and his associates (about 1936) and its rediscovery by Mr. and Mrs. Dennis Cowper of Belen, New Mexico, numerous collectors and botanists have endeavored to recollect it but without success.

The Desert Botanical Gardens expeditions have spent a total of 21 man days scouring the hills on which the first plants were found but without success. Now that we have the plants the reason for our failure is self evident as the plants are deeply seated in the ground with only a flat surface about the size of a nickel showing and this surface is usually covered with drift sand. We had been looking for a globose plant similar to the plant illustrated by Croizat.

One plant was collected in 1949 by Hester at a point north of Joseph City and about 40 miles west of the type location we are informed.

In the original publication by Croizat the description of both the genus *Navajoa* and of the species *N. peeblesiana* were in Latin but his notes in English follow:

Seeing for the first time a live plant of the Holbrook cactus, I immediately thought of *Toumeyia*, for the cylindric, slender body with prominent podaria of this plant is reminiscent, indeed, of the lone species under that genus. The spines, too, are not incompatible in their habit and nature with those of *T. papyracantha*. They are not as flexible as in that species, but they are neither pungent nor very hard. Usually four of these spines, neatly arranged crosswise, stand at the tip of every podarium, this being quite ungrooved. Occasionally, a cluster of three to five smaller and somewhat irregular spines appears behind the main rosette of four spines. The pubescence is woolly and rather abundant

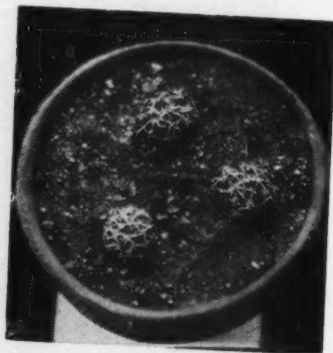


FIG. 68. The plants measure less than an inch in diameter

on the areole at the root of the spines. In the live plant in my hand the pubescence of the spines, which is said to cause the plant itself to be reminiscent of a *Typha* spike in bloom, is not in evidence. The spines seem to consist of weak woody tissue, arranged in longitudinal bands and made of longitudinal cells of uniform pale ochre color. It seems probable—though the matter must be studied further—that the “hairs” on the spines are the result of the scaling off of the longitudinal cells in the outer layers of the tissue of the spine, and that such “hairs” fail to appear when no scaling of the spine takes place.

I have not seen flowers or fruits, but a close-up that shows the details of the flower and the descriptions indicate that it does not possess the barely scaly manifest hypanthium of *Toumeyia*. I regret that I cannot see more of the hypanthium from the material at hand, but should my plant ever flower I will contribute additional notes on this very important character. In the light of the material and data now available it does not prove possible to treat this plant otherwise than as a monotypic genus like *Toumeyia* and *Utahia*, with the assurance at least that the entity now being published as a genus will not be lost, if even reduced of rank, in a further progress of our studies.

As the description reveals, this is a small plant, barely 3 cm. tall, as seen. The podaria (nipples) are prominent, spreading to erect, about 3 mm. long. The flowers are 16-17 mm. long, with outer lobes pale brown, inner ones lined in center by a pinkish stripe. The affinities of this monotype are definitely toward *Toumeyia*, with which further comparisons will have to be made as soon as live material is available for a full discussion of the characters of the flower and fruit.

In “Cactus,” Paris, France I:4:5, 1946, *Revision de la Systematique et Quelques Nouvelles Combinaisons Dans le Famille des Cactacees*—W. Taylor Marshall—I proposed amendments to the genus *Toumeyia* Britton and Rose so that *Navajoa* could be included in that genus. An English translation of this article appeared in *Cactus and Succulent Journal* XIX:5:76, May 1947.

A description made from eight plants sent to us by Denis Cowper follows:

Primary root napiform, secondary roots somewhat thickened; plant body blobose to cylindrical, 3-4 cm. long, 2.5-3 cm. in diameter,  $\frac{4}{5}$  or more of the body underground, only the flattened top with erect tubercles at the level of the soil or slightly above the soil when turgid, usually covered with drift soil; tubercles glaucous-green, at first blobose, obtuse, 4 mm. high, later flattened laterally; areoles on apex of tubercles,

small, circular and without content other than spines; spines all radial, 3 to 5 mostly 4 to an areole, subulate or sometimes flattened, the lower 3 about 3 mm. long, sharply bent downward and appressed against the tubercle, the upper one 5 to 14 mm. long, ascending and connivent over the top of the plant, all spines horn colored at first, later grayish, in youth coated with velvet, the texture soft and flexible, not pungent, the spines persistent on old tubercles even when below the surface of the ground but on old tubercles not velvety but then appearing annulate and woody.

Flowers known only from the photographs quoted by Croizat.

#### LATER NOTES



FIG. 69. Enlarged

Photo of *Navajoa peeblesiana* near Holbrook, Navajo County, Arizona, by the late R. H. Peebles. He describes the plant as, “about  $1\frac{1}{4}$  inches diameter. The perianth segments are white with a pink or maroon midstripe.” The late Wm. T. Marshall left the following cultural notes, “We planted three of the original six plants in soil from the hill where they grew and the other three in good top soil and Vigero. Those in their native soil flowered but have made no growth and are still just level with the soil. The second lot in better soil are becoming cylindrical and look very healthy besides flowering.”

## SPOTLIGHT ON ROUND ROBINS

It is always a pleasure to welcome new members to our Robins because I know what delights await them. These are the most recent members: Mrs. J. L. Michael, Prichard, Alabama; Mrs. Andrew O'Donnell, Troy, New York; Mrs. Peter Klinefelter, Barrington, Illinois; Mrs. George W. Nilsson, Los Angeles, California; Mr. Marvin Tooley, Corpus Christi, Texas.

The following interesting Robins have space available for at least several members in each one: The Tree-type Cactus Robin, for those who like the big fellows; Euphorbia Robin No. 2, seemingly a very popular genus; Cactus and Succulent Robin No. 5, which replaces a former Robin; the Decorator's Robin, for those who use succulent plants in arrangements and with an eye to decorative effects; an Epiphyllum Robin including rain forest plants which has two members on its waiting list; a new International Robin, No. 4, which I suggest to take care of any overseas members who might be inquiring, since there is no space available in any Robin now going overseas. A number of members from this country are always acceptable in such a Robin group too.

Wouldn't it be a good time for those of you who have not yet written me but have thought you would like to be in a Robin or two to drop me a card or letter right now? Whether you have only a few plants or many, whether you specialize or collect in a general way, there is a Robin for you. There is a certain indefinable joy in receiving a Robin, of hearing from new friends, who soon become old friends, and who enjoy the same hobby. Do write soon.

News from the Robins has such a wealth of material it is not possible to get it all in one report but I hope it will be interesting what I have chosen.

To start things off Mrs. Lavon Cleaver, in California, paints a pretty picture saying, "Here in a bowl on the table is a blossom of Epiphyllum hermosissimum. I do believe it is the most colorful of all flowers and as large as the largest dinner plate." In an earlier letter she remarked, "Isn't Echeveria pulvinata a beauty? Close by is the dainty Painted Lady, *E. derenbergii* and further in the shade is one of my prized possessions *E. La cañada* and the cuttings are going to town. The new leaves are a rich maroon speckle on a lighter maroon." She has this to add about her gardening, "I use no sprays and no fertilizers (except for experiment) other than steer manure. I do use leaf mold now and then. My main idea is to keep plants healthy and happy, and they see to it that the bugs stay

away." Mrs. Nona B Mott wondered, "is it true cacti have to have a resting period to bloom? Well, for this year I know the answer—they don't! But what the effects of a full two years growing period will have is still to be settled. I have watered them the same as during the growing season and they never stopped growing. They have almost continuous light and warmth. Now they are coming into full bloom at least six weeks to two months earlier." She mentions several Mammillarias in full flower; Parodias in flower and bud; the *Astrophytum* and the *Echinopsis* making buds; Desert Rose, *Trichodiadema densa*, sending up stems and buds; Tiger Jaws starting over; five *Rhipsalis* blooming and have been for a long time. All this in addition to the regular winter bloomers such as crassulas, aloes, haworthias, gasterias and bryophyllums making a show such as she never saw before.

Miss Agnes T. Hirshinger of New York City speaks her mind about the use of fertilizers for cacti saying she makes her plants happy by adding no manure but "bone meal is powerful enough for me . . . and I need nothing else except some Johnson's special cactus fertilizer on the heavily rooted hybrids and also the *Echinocereii* and the *Gymnocalyciums*, but never more than once a growing season." Ian McKay writes from Canada mentioning the article "Feed Your Cacti" by Mr. Blocher which appeared in the July-August issue of our Journal in 1956 and says "it was the means of saving an *Echinopsis* that was as good as dead, and jarred a recalcitrant *Cereus* into vigorous growth." Mrs. Elodie Gardner, from Pennsylvania, calls the soil mix she uses "a joke". She uses a rich mixture of on third each of black leafmold, good garden soil and manure with finely chopped straw in it, adding a two inch pot of potash and a three inch pot of charcoal to a bushel of soil. After sterilizing this she plants her African violets in it for six months and then transplants to new soil, using the old for her cacti, which thrives on it, to judge from the results. Harry Barwick from Wisconsin, wrote, "I have had *Mammillaria hahniana* of one and a half inches diameter bloom for me but it is necessary to put it in extreme light especially during the winter months when it blooms." He also told of his success with seedlings of less than a year which he had grown to one half to three quarters of an inch by watering with cow manure tea.

A tip, given by Mrs. Ella Nipper of Illinois, for "Rice Cactus" (*Rhipsalis*) is worth noting. She says, "I use one third each of peat, sand and rich soil as compost or well rotted cow manure. Give it plenty of light, about like that for African violets, and I find these plants like plenty

of room. Give them a larger pot than you would usually use, as a 4" instead of a 2" pot." She also writes, "Succulents can be shipped in insulating material like glass wool during cold weather. Epiphyllums were shipped in the winter months as an experiment and none ever froze. I used glass wool but all types of material were used too." From this same Succulents Only Robin Mrs. Rose White had some pertinent information on the propagation of Echeverias learned from a man who specializes in them. "He told me," she recalled, "that many of the better Echeverias send out plantlets in two rows on either side of the stem. If you take the leaves off near these propagating points, they will root but none of the other leaves will. He propagates them by cutting the flower stem while it is still young, before it has flowered, removes the flower tip and roots the base which will send up offsets." Mrs. Lois Covey, writing from Florida, says there are many problems in gardening here. "First, the soil—you start with pure sand and you have to make humus and add it, not once, but constantly. There are extremes of sun and shade, and of wet and dry to be arranged for. I am trying out plants that will survive this kind of summer when I am not here. This is the reason I am growing Bromeliads. They need little care except water. They bloom and thrive and increase and make a garden look very tropical, always attracting attention because they are unusual. Some of the Bryophyllums and Kalanchoes are so invasive we throw them out like weeds. The tall Sansevierias are bad offenders because their roots go down to China and it takes terrible digging to get them out. Stapelias grow like weeds too. I grow them in conch shells with the least little soil and that restricts them. Many of the Greek families grow them in cement urns where they fall gracefully over the edges. In all the nurseries here all cacti and succulents are grown in greenhouses, not outdoors."

Several members gave their impressions of the International Flower Show held in New York City in which the N. Y. branch affiliate of our society did so well, getting two first prizes (\$100 and \$30) and a gold medal for their three exhibits. Mrs. "Midge" Wihol said it was fortunate one of the members was in the trucking business and "he amiably drove around the country collecting members' plants for the show and brought them all back the following week with nary a glochid bent. This was a great help. A dozen of my plants were chosen to go including several gasterias, an aloe, a Mam. elongata in bloom, a huge Opuntia ficus-indica and my favorite of all, the classically stark and beautiful Crassula arborescens (not argentea)."

Warner Dodd, director of International

Robin No. 3, wrote from Arizona of his best grafting stock being *Opuntia maconii*. An *Echinocereus knippelianus* grafted on it with one rib and three areoles, "after one and a half years of growth, now has full sized head and 15 to 18 pups and will bloom approximately five times this year." He adds, "The Paramount Hybrids, at the present time show rudiments of at least 25 to 30 blossoms." In the same Robin is Dan Lynch, one of our youngest members, who, at 16 years, has over 1300 plants in pots and hundreds more in the ground, with over 90 genera represented in the cacti alone. Some of his prize plants he mentions are: "Euphorbia obesa, male cristate, a beautiful double crest on a 15 year old plant; *Echinocereus rigidissimus* cristate grafted on *Cereus validus*. The crest is thirty years old, and a foot across with nine individual crests; *Lophocereus schottii* monstrosus, no spines on this green beauty a mere 14" tall; *Echinocactus grusonii*, a plain one of about 60 years; *Euphorbia abyssinica*, 5 feet tall; *Ferocactus wislizenii*, 1 meter tall; one each of *Ariocarpus* except trigonus; *Epiphyllums* until they come out of my ears, 5 real oldies that have 100 blooms yearly; *Cephalocereus polylophus*, 13 feet; *Astrophytum*s, all species."

Shirley Schrade took a trip with her parents this spring through Arizona to California and from what she wrote I know every member would have liked to have been along too. She said, "The main thing which interested me about California was the multitude of cactus and succulents growing around. Huge hanging baskets of sedums, Echeverias and Agaves. I turned green with envy at the sight of huge *Crassula argentea*s growing like weeds all over the place. (And how I struggle to grow my two plants in the house!) A mound of *Echinopsis* that would gladden the heart of any of us eastern cactophiles was growing near a garbage can, and no one seemed to care about them except me. I think I'd be the happiest cactophile in the world if I lived in a climate where my plants grew so abundantly that people regarded them as 'just weeds'. I never saw such beautiful colors on the succulents and I don't think I'll ever forget the thrill of it." Shirley lives in Ohio.

In Robin No. 6 Mrs. Mildred Wellbaum, who lives in Oregon, writes of her most beautiful plants, sharing pictures of them. Her "cluster of *Mammillaria canelensis* is full of huge pinkish-looking buds," she says, "but it has milky sap and you dare not water it too much even in summer." She has also a cluster of *Echinocereus delaetii* which has long hair. It's a beauty too. "The *Opuntia* I am most proud of," she writes, "is going to bloom for me! I think it is quite something under glass. This was just a

pad—but a very large one—blue green, and called *O. lagunae* and I bought it from Gates. Do wish he were alive so I could tell him about it as he got it from the very lower tip of Baja California." She praises Vitamin B<sub>1</sub> and is using it again this year. She goes on, "I have hundreds of buds on the *Epiphyllums*. *Stenocactus* that came from Old Mexico in 1955, looking terribly, and of course without roots, are all blooming this year. Such a thrill! Dozens of buds on *Echinopsis* and *Lobivia* and the *Paramount Hybrids* are bursting their sides! One *Echinocereus* has fourteen buds all on the south side of the plant. We have our plants directly in the benches of the greenhouse so we must water from the top. I do most of mine in the late afternoon and then in the morning go over the ones with top depressions, wiping with kleenex if water still stands."

This closes the news from the Robins, but the Robins themselves are flying merrily on. There is a most cordial invitation extended to all who would like to be included in one. I'll be looking for those cards and letters! Write me.

(MRS.) GLADYS H. PANIS,  
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